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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Masato Honma

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KUBOVCIK & KUBOVCIK

SUITE 1105

1215 SOUTH CLARK STREET

ARLINGTON, VA 22202

EXAMINER

HIGGINS, GERARD T

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

04/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,624	Applicant(s) HONMA ET AL.	
	Examiner GERARD T. HIGGINS	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15, 18 and 21-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/23/2005 and 09/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicants' response filed 02/14/2008 has been entered. Applicants are correct in noting with respect to the restriction requirement that claims 27-36, and claims 37 and 38 belong solely to Groups V and VI, respectively. The Examiner appreciates noting as such in the response. Currently claims 1-38 are pending.

Election/Restrictions

2. Applicant's election without traverse of Group I, claims 1-13, 16, 17, 19, and 20 in the reply filed on 02/14/2008 is acknowledged.

3. Claims 14, 15, 18, and 21-38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02/14/2008.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "**B2**" and "**B3**" have both been used to designate the second structural member in Figure 13 (please see pages 56, line 7; 62, lines 15 and 21; 63, line 25; and 65, lines 4 and 15) Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to because the reference character **APL** in Figure 8 does not agree with the specification at page 29, line 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the

appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **70P-74P** with regard to Figure 12 are not mentioned at pg. 48, lines 2-11 and **K** is not mentioned with regard to Figure 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

8. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim includes thicknesses less than 10 microns.

9. Claims 9 and 17 are objected to because of the following informalities:

- a. In claims 9 and 17 (lines 3 and 19 of the respective claims) applicants refer to “a thermosetting resin composition having groups of reinforcing fibers consisting of numerous continuous filaments arranged in a thermosetting matrix resin.” The phrase “a thermosetting matrix resin” makes the claim sound as if there is both “a thermosetting resin composition” and “a thermosetting matrix resin;” however from applicants’ disclosure it appears that there is only one thermosetting resin layer intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-9, 11-13, 16, 17, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "rugged" in claims 1 and 16 is a relative term which renders the claim indefinite. The term "rugged" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear to what degree a surface must be non-flat for it to be considered "rugged." For purposes of examination, the Examiner will treat the term "rugged" as any surface that is not perfectly flat.

With regard to claim 7, applicants refer to "a layer" in the second line of the claim and then proceed to detail two layers of said thermoplastic and thermosetting resin. It is unclear whether applicants wish to have either a thermosetting layer or thermoplastic layer each with reinforcing fibers, or rather a stratum comprised of said thermoplastic and thermosetting layers with reinforcing fibers. For the purposes of examination, the Examiner will treat this claim by both possible options.

With regard to claims 8 and 9, one cannot refer to the specification for limitations in this manner, and therefore the claims are indefinite.

Claim Rejections - 35 USC § 102

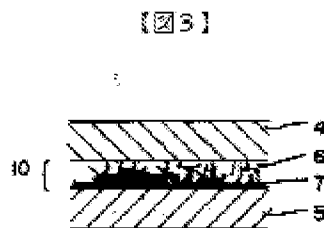
12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-3, 6, 8, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Obara (JP 07-047152), machine translation included.

With regard to claim 1, Obara teaches a layered tennis racket frame [0007]. The frame is comprised of a thermosetting resin [0008], a thermoplastic resin [0009], and continuous fibers in both the thermosetting [0008] and thermoplastic layers [0012] from the point of providing the greatest strength of the molded object. With regard to the limitation that the interface is "rugged," Obara teaches at [0015] that the "most important point about this invention" is the fact that the thermosetting resin and thermoplastic layers are "intermingled;" furthermore, Obara shows this intermingling in Figure 3.



The intermingling is shown in the area **10**. The Examiner deems this to comprise ruggedness. With regard to the limitation that the thermoplastic resin layer is on the

surface of the object, Obara teaches at [0014] that the object may have the thermosetting resin or the thermoplastic layer as the outer layer for the racket frame.

With regard to claim 2, Obara teaches at [0012] that arranging “the direction of fiber length to one way substantially can strengthen matrix resin most effectively, and it is desirable.”

With regard to claims 3 and 12, Obara teaches at [0008] that epoxy resin is preferred as the thermosetting resin. He also teaches at [0021] that the thermosetting resin is heated in a die temperature of 70 °C, and then stiffened at 160 °C for 20 min. Judging by the fact that the preferentially used materials are the same and that these heating temperatures are greater than 60 °C, Obara will inherently anticipate claim 3.

With regard to claim 6, since the racket frame is formed as a tube comprising joined thermosetting and thermoplastic layers, and that the layers may be formed in any order [0014]; it is clear that the thermoplastic layer may comprise the inner layer/surface of the frame, and therefore that would lead it to inherently have a surface area between 0.1 and 50% of the total surface area. This is true because the outer layer of the racket frame would have a greater surface area than the inner layer, and since the total surface area of the frame must be the sum of the surface areas of the inner and outer layers; it would necessarily be true that the inner layer must have a surface area between 0.1 and 50%.

With regard to claim 8, considering the fact that these materials (continuous arranged fibers set in an intermingled/rugged thermosetting and thermoplastic article, additionally please see the anticipation evidence presented for claims 11-13) are the

same; a test piece formed in the same manner of applicants would inherently comprise the tensile/bonding strength; furthermore, Obara mentions the intensity, rigidity, and endurance of the racket at [0006].

With regard to claim 11, Obara teaches using carbon fibers at [0008] and [0012].

With regard to claim 13, Obara teaches at [0009] the different thermoplastic materials, including polyolefins, polyamides, polyesters, acrylics, polycarbonates, and polystyrenes.

Claim Rejections - 35 USC § 102/103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 7 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Obara (JP 07-047152).

With regard to claim 7, Obara teaches at [0027] that the thermoplastic resin polypropylene may be arranged on one side or both sides of the epoxy resin thermoset.

Alternatively, Obara teaches all the limitations of applicants' claim 1 in section 12 above; however, it fails to disclose a situation in which a stratum of a thermoset and a thermoplastic with reinforcing fibers is arranged on the side opposite to the side where said thermoplastic resin layer is positioned of the article of claim 1.

In this alternative analysis of the language of claim 7, this new limitation represents a mere duplication of parts since the article of claim 1 reads on the "a layer" of claim 7. It has been held that "mere duplication of parts has no patentable significance unless a new and unexpected result is produced." Please see MPEP 2144.04 and *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). In this instance merely duplicating the stratum of a thermoplastic and thermosetting resins with reinforcing fibers contained therein would predictably add to the structural integrity of the device overall.

Claim Rejections - 35 USC § 103

16. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara (JP 07-047152), as applied to claim 1, in view of Nishimura et al. (JP 07-112039), machine translation included.

Obara discloses all of the limitations of applicants' claim 1 as seen in section 12 above; however, it fails to specifically disclose the thickness of the region where the reinforcing fibers are in the thermoplastic layer.

Nishimura et al. disclose at [0009] that it is known to make a thermoplastic layer of a tennis racket 1 mm in thickness. Clearly, the fibers contained in said thermoplastic layer would not be in a region larger than 1mm or 1000 microns, and therefore the area where the reinforcing fibers would be contained would be between 10 and 1000 microns.

Since Nishimura et al. and Obara are both drawn to molded tennis rackets that have thermosetting and thermoplastic resin layers with reinforcing fibers that are rugged/intermingled or have an irregular pattern at the interface of the layers; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the thermoplastic layer of Obara approximately 1 mm (1000 microns) in thickness and therefore to contain the reinforcing fibers in an area smaller than that, including the thickness regions claimed. One of ordinary skill in the art would understand that the thickness region of reinforcing fibers would have a direct impact on the rigidity and overall strength of the resins; furthermore, one of ordinary skill would know to make the reinforcing fiber not present on the surface of the tennis racket in order to prevent splintering of said reinforcing fibers, which could injure the consumer of said tennis racket.

17. Claims 9-13, 16, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inogakura et al. (JP 09-277420), machine translation included, in view of Yoshihara et al. (EP 1191079).

With regard to claim 9, Inogakura et al. teach a fiber-reinforced plastic that is bonded to electrical devices [0011] and [0015]. The 1st member of Inogakura et al. is a thermosetting resin [0010], which contains continuous fiber reinforcements [0008]. Inogakura et al. also teach bonding it to a 2nd member by way of an adhesive [0011]; however, they fail to specifically teach an adhesive that is a thermoplastic resin composition, which has the bonding strengths listed in claim 9.

Yoshihara et al. teach adhesive films, which comprise thermoplastic resins at [0011] to [0016]. With regard to the bonding strengths listed in claim 9, Yoshihara et al. teach that is known that the adhesives would intrinsically have a higher bonding strength at lower temperature (please see Table 1A and [0036] to [0038]). This is true because at higher temperatures the thermoplastic resin would start to melt (above the glass transition temperature) such that the adhered pieces could be separated. Yoshihara et al. disclose at [0023] that these adhesives are used for automobiles, electronics, office automation equipment, building materials, etc.

Since Yoshihara et al. and Inogakura et al. are both drawn to bonding resin for bonding electronics; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make use of the thermoplastic adhesive film of Yoshihara et al. as the adhesive layer to bond the 1st and 2nd members of Inogakura et al. With regard to the specific bonding forces seen in claim 9, the combination of Yoshihara et al. and Inogakura et al. would intrinsically possess the claimed bonding strengths because the combination of Yoshihara et al. and Inogakura et al. disclose a layered product identical to that presently claimed.

With regard to claim 10, Yoshihara et al. disclose at [0032] that the adhesive film is 1 mm (1000 microns) thick.

With regard to claim 11, Inogakura et al. disclose at [0008] that the continuous fibers may be carbon fibers.

With regard to claim 12, Inogakura et al. disclose at [0010] that the thermosetting resin may comprise an epoxy resin.

With regard to claim 13, Yoshihara et al. disclose at [0011] that the thermoplastic adhesive resin may comprise polyolefins, polyamides, and polyesters.

With regard to claim 16, Inogakura et al. in view of Yoshihara et al. render obvious a 1st member bonded to the 2nd member via a thermoplastic adhesive resin film. The two members are bound by “integral moulding” [0011].

With regard to claim 17, Inogakura et al. disclose that the 2nd member is comprised of a thermoplastic [0010].

With regard to claim 19, Inogakura et al. disclose that the integrated molded object may be used with electrical and electric equipment [0015].

With regard to claim 20, while there is no disclosure that the fiber-reinforced plastic is a part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the preamble does not state any distinct definition of any of the claimed invention's limitations and further that the purpose or intended use, i.e. part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture, recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art fiber-reinforced plastic and further that the prior art structure which is a fiber-reinforced plastic identical to that set forth in the present claims is capable of performing the recited purpose or intended use. Lastly, an aircraft, a two-wheeler, and a part member of a motor vehicle all may comprise electronic apparatuses, and therefore there is indirect disclosure of claim 20 in Inogakura et al.

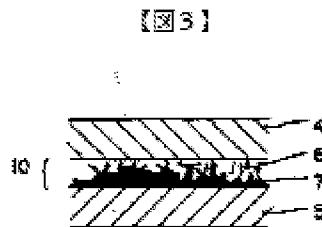
18. Claims 16, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inogakura et al. (JP 09-277420) in view of Obara (JP 07-047152).

With regard to claim 16, Inogakura et al. teach bonding of a first member to a second member by way of an adhesive to create and "integral moulding" of said members [0011]; however, it does not teach the 1st member of applicants' claim 1.

Obara teaches a layered tennis racket frame [0007]. The frame is comprised of a thermosetting resin [0008], a thermoplastic resin [0009], and continuous fibers in both the thermosetting [0008] and thermoplastic layers [0012] from the point of providing the greatest strength of the molded object. With regard to the limitation that the interface is "rugged," Obara teaches at [0015] that the "most important point about this invention" is

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the fact that the thermosetting resin and thermoplastic layers are “intermingled;” furthermore, Obara shows this intermingling in Figure 3.



The intermingling is shown in the area **10**. The Examiner deems this to comprise ruggedness. With regard to the limitation that the thermoplastic resin layer is on the surface of the object, Obara teaches at [0014] that the object may have the thermosetting resin or the thermoplastic layer as the outer layer for the racket frame.

Since Inogakura et al. and Obara are both drawn to fiber-reinforced resin compositions that provide high strength and rigidity, it would have been obvious to one having ordinary skill in the art of fiber-reinforced resins at the time the invention was made to substitute the 1st member of Inogakura et al. with the fiber-reinforced resin composition of Obara. The results of such a substitution would have been known by one having ordinary skill, specifically an increase in the strength, rigidity, and endurance of the bonded members.

With regard to claim 17, Inogakura et al. disclose that the 2nd member is comprised of a thermoplastic [0010].

With regard to claim 19, Inogakura et al. disclose that the integrated molded object may be used with electrical and electric equipment [0015].

With regard to claim 20, while there is no disclosure that the fiber-reinforced plastic is a part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner’s position that the preamble does not state any distinct definition of any of the claimed invention’s limitations and further that the purpose or intended use, i.e. part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture, recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art fiber-reinforced plastic and further that the prior art structure which is a fiber-reinforced plastic identical to that set forth in the present claims is capable of performing the recited purpose or intended use. Lastly, an aircraft, a two-wheeler, and a part member of a motor vehicle

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all may comprise electronic apparatuses, and therefore there is indirect disclosure of claim 20 in Inogakura et al.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional 'X' references cited in the search report are cumulative to the present rejections and also speak to the level of ordinary skill in the art of strong/rigid thermoplastic/thermosetting fiber-reinforced articles; further, the cited but not applied reference is also drawn to carbon fiber reinforced composites for use as electromagnetic shielding.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Gerard T Higgins, Ph.D.
Examiner
Art Unit 1794

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/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794